WHAT IS CLAIMED IS:

1. A method for loading a preservative into blood platelets comprising: providing a preservative solution having a preservative, water and protein; and loading blood platelets with the preservative solution to produce preservative-loaded blood platelets, wherein said preservative solution generally has higher glass transition temperatures than glass transition temperatures for a preservative solution having the preservative, water and no protein.

2. The method of Claim 1 wherein said preservative solution in said preservative-loaded blood platelets comprises a gradient of the glass transition temperature (degrees C) to a water content (grams of water per gram of dry weight of preservative and protein) ranging from about 50 to about 900 at a water content of less than about 0.40 grams of water per gram of dry weight of preservative and protein.

3. The method of Claim 1 wherein said glass transition temperature of said preservative solution in said preservative-loaded blood platelets solution increases at a water content of less than about 0.40 grams of water per gram dry weight of preservative and protein.

4. The method of Claim 1 wherein said preservative solution in said preservative-loaded blood platelets comprises a greater rate of glass transition temperature per water content (weight of water per dry weight of preservative and protein) increase at a water content of less than about 0.25 grams of water per gram dry weight of preservative and protein than at a water content greater than about 0.25 grams of water per gram dry weight of preservative and protein.

5. The method of Claim 1 wherein said preservative solution in said preservative-loaded blood platelets comprises a greater rate of glass transition temperature per water content (weight of water per dry weight of preservative and protein) increase at a water content of less than about 0.15 grams of water per gram dry weight of preservative and protein than at a water content of greater than about 0.15 grams of water per gram dry weight of preservative and protein.

6. The method of Claim 1 wherein said preservative solution in said produced preservative-loaded blood platelets generally has said higher glass transition

temperatures at a water content (weight of water per dry weight of preservative and protein) of less than about 0.25 grams of water per gram dry weight of preservative and protein.

7. The method of Claim 1 wherein said preservative comprises an oligosaccharide.

8. The method of Claim 7 wherein said oligosaccharide is trehalose.

9. The method of Claim 1 wherein said preservative-loaded blood platelets comprise a water content ranging from about 0.02 grams of water per gram of dry weight of preservative and protein to about 0.40 grams of water per gram of dry weight of preservative and protein.

10. The method of Claim 1 wherein said preservative-loaded blood platelets comprise a water content ranging from about 0.15 grams of water per gram of dry weight of preservative and protein to about 0.40 grams of water per gram of dry weight of preservative and protein.

11. The method of Claim 1 wherein said protein is albumin.

12. The method of Claim 1 wherein said albumin is bovine albumin.

13. The method of Claim 1 wherein a gradient of the glass transition temperature (degrees C) to the water content (grams of water per gram of dry weight of preservative and protein) ranges from about 50 to about 900 at a water content of less than about 0.30 grams of water per gram of dry weight of preservative and protein.

14. The method of Claim 1 wherein a gradient of the glass transition temperature (degrees C) to the water content (grams of water per gram of dry weight of preservative and protein) ranges from about 50 to about 900 at a water content ranging from about 0.02 to less than about 0.40 grams of water per gram of dry weight of preservative and protein.

15. The method of Claim 1 wherein a gradient of the glass transition temperature (degrees C) to the water content (grams of water per gram of dry weight of preservative and protein) ranges from about 100 to about 800 at a water content ranging from about 0.15 to about 0.30 grams of water per gram of dry weight of preservative and protein.

16. The method of Claim 1 wherein a gradient of the glass transition temperature (degrees C) to the water content (grams of water per gram of dry weight of preservative and protein) ranges from about 50 to about 150 at a water content ranging from about 0.20 to about 0.30 grams of water per gram of dry weight of preservative and protein.

17. The method of Claim 1 wherein a gradient of the glass transition temperature (degrees C) to the water content (grams of water per gram of dry weight of preservative and protein) ranges from about 75 to about 125 at a water content ranging from about 0.20 to about 0.30 grams of water per gram of dry weight of preservative and protein.

18. The method of Claim 1 wherein a gradient of the glass transition temperature (degrees C) to the water content (grams of water per gram of dry weight of preservative and protein) ranges from about 700 to about 900 at a water content ranging from about 0.15 to about 0.20 grams of water per gram of dry weight of preservative and protein.

19. The method of Claim 1 wherein a gradient of the glass transition temperature (degrees C) to the water content (grams of water per gram of dry weight of preservative and protein) ranges from about 750 to about 850 at a water content ranging from about 0.15 to about 0.20 grams of water per gram of dry weight of preservative and protein.

20. The method of Claim 1 wherein said preservative solution comprises said preservative and said protein in a weight ratio ranging from about 0.25 grams to about 1.75 grams of preservative per each gram of protein.

21. The method of Claim 1 wherein said preservative solution comprises said preservative and said protein in an approximate 1:1 weight ratio.

22. The method of Claim 1 wherein said preservative-loaded blood platelets have said higher glass transition temperatures.

23. The method of Claim 9 wherein said preservative-loaded blood platelets have said higher glass transition temperatures.

24. Blood platelets produced in accordance with the method of Claim 1.

25. A platelet composition comprising

blood platelets having a preservative solution including a preservative, water, and protein, and generally having higher glass transition temperatures than glass transition temperatures for blood platelets loaded with the preservative, water, but no protein.

26. The composition of Claim 25 wherein said blood platelets comprise a gradient of the glass transition temperature (degrees C) to a water content (grams of water per gram of dry weight blood platelets) ranging from about 50 to about 900 at a water content of less than about 0.40 grams of water per gram of dry weight blood platelets.

27. The composition of Claim 25 wherein a gradient of the glass transition temperature (degrees C) to the water content (grams of water per gram of dry weight of blood platelets) ranges from about 50 to about 150 at a water content ranging from about 0.20 to about 0.30 grams of water per gram of dry weight of blood platelets.

28. The composition of Claim 25 wherein the gradient of the glass transition temperature (degrees C) to the water content (grams of water per gram of dry weight preservative) ranges from about 75 to about 125 at a water content ranging from about 0.20 to about 0.30 grams of water per gram of dry weight preservative.

29. The composition of Claim 25 wherein a gradient of the glass transition temperature (degrees C) to the water content (grams of water per gram of dry weight of blood platelets) ranges from about 700 to about 900 at a water content ranging from about 0.15 to about 0.20 grams of water per gram of dry weight of blood platelets.

30. The composition of Claim 25 wherein a gradient of the glass transition temperature (degrees C) to the water content (grams of water per gram of dry weight of blood platelets) ranges from about 750 to about 850 at a water content ranging from about 0.15 to about 0.20 grams of water per gram of dry weight of blood platelets.

31. The composition of Claim 25 wherein said preservative comprises an oligosaccharide.

32. The composition of Claim 31 wherein said oligosaccharide is trehalose.

33. The composition of Claim 25 wherein said protein comprises albumin.

34. A process for processing blood platelets comprising:

providing a preservative solution having a preservative, water, and protein;

suspending blood platelets in the preservative solution at a concentration greater than about 10^8 platelets per ml. of preservative solution to produce preservative-loaded blood platelets;

freeze-drying the preservative-loaded blood platelets; and

recovering at least 75% of the freeze-dried platelets.

35. The process of Claim 34 wherein said preservative solution comprises from about 60 mM to about 240 mM of said preservative and from about 2% by weight to about 8% by weight of said protein.

36. The process of Claim 34 wherein said concentration ranges from about 0.5×10^9 platelets per ml preservative solution to about 10.0×10^9 platelets per ml preservative solution.

37. The process of Claim 34 wherein said concentration ranges from about 0.5×10^9 platelets per ml preservative solution to about 10.0×10^9 platelets per ml preservative solution, and said recovering includes recovering at least 85% by weight of the freeze-dried platelets.

38. The process of Claim 34 additionally comprising storing, prior to recovering, the freeze-dried platelets.

39. A process for preserving protein structure in blood platelets comprising:

providing a preservative solution having a preservative, water and protein;

loading blood platelets with the preservative solution to produce preservative-loaded blood platelets;

dehydrating the preservative-loaded blood platelets while maintaining a residual water content in the blood platelets equal to or less than about 0.30 gram of residual water per gram of dry weight blood platelets to preserve protein structure of the blood platelets upon rehydrating after storage;

storing the dehydrated preservative-loaded blood platelets; and

rehydrating the stored dehydrated preservative-loaded blood platelets with water vapor to preserve protein structure of the blood platelets.

40. The process of Claim 39 wherein said rehydrating the stored dehydrated preservative-loaded blood platelets with water vapor comprises increasing the water content of the preservative-loaded blood platelets until the preservative-loaded blood platelets have a water content equal to or less than about 0.30 grams of water per gram of dry weight blood platelets.

41. The process of Claim 39 additionally comprising directly hydrating with bulk water the rehydrated preservative-loaded blood platelets.

42. A dehydrated composition for mammalian therapy comprising:

freeze-dried platelets comprising a preservative solution for preserving biological properties during freeze-drying and rehydration, wherein said preservative solution includes water, protein, and a preservative, and said platelets are rehydratable so as to have a normal response to at least one agonist.

43. The dehydrated composition of Claim 42 wherein said normal response to at least one agonists includes a response to thrombin in a physiological concentration commencing at thrombin concentrations ranging from about 0.1 U/ml to about 1.0 U/ml, and wherein between thrombin concentrations ranging from about 0.2 U/ml to about 0.70 U/ml, percent(%) aggregation of the rehydrated platelets ranges from about 20% to about 80%.

44. The dehydrated composition of Claim 42 wherein said normal response to at least one agonists includes a response to ristocetin in a physiological concentration commencing at ristocetin concentrations ranging from about 1.0 mg/ml to about 10.0 mg/ml.

45. The dehydrated composition of Claim 42 wherein said normal response to at least one agonists includes a response to ristocetin in a physiological concentration and between ristocetin concentrations ranging from about 2.0 mg/ml to about 10.0 mg/ml, percent(%) aggregation of the rehydrated platelets ranges from about 10% to about 100%.

46. The dehydrated composition of Claim 42 wherein said normal response to at least one agonists includes a response to ristocetin in a physiological concentration and between ristocetin concentrations ranging from about 3.5 mg/ml to about 9.0 mg/ml, percent(%) aggregation of the rehydrated platelets typically ranges from about 40% to about 90%.

47. The dehydrated composition of Claim 42 wherein said normal response to at least one agonists includes a response to ristocetin in a physiological concentration and between ristocetin concentrations ranging from about 4.0 mg/ml to about 7.0 mg/ml, percent(%) aggregation of the rehydrated platelets ranges from about 60% to about 80%.

48. A process for loading a preservative into blood platelets comprising:

providing a preservative solution having a preservative, water and protein;

disposing platelets in the preservative solution for loading the preservative from the preservative solution into the platelets to produce preservative-loaded blood platelets wherein said preservative solution generally has higher glass transition temperatures than glass transition temperatures for a preservative solution having the preservative, water and no protein; and

preventing a decrease in a loading efficiency gradient in the loading of the preservative into the platelets.

49. The process of Claim 48 wherein said preservative comprises an oligosaccharide and said preventing a decrease in a loading efficiency gradient in the loading of the oligosaccharide into the platelets comprises maintaining a concentration of the oligosaccharide in the oligosaccharide solution below about 50 mM.

50. The process of Claim 48 wherein said loading comprises loading by fluid phase endocytosis.

51. The process of Claim 49 wherein said loading comprises loading by fluid phase endocytosis.

52. The process of Claim 48 wherein said preservative comprises an oligosaccharide and said preventing a decrease in a loading efficiency gradient in the loading

of the oligosaccharide into the platelets comprises maintaining a positive gradient of loading efficiency to concentration of the oligosaccharide in the oligosaccharide solution.

53. The process of Claim 48 wherein said preservative comprises an oligosaccharide and said preventing a decrease in a loading efficiency gradient in the loading of the oligosaccharide into the platelets comprises maintaining a positive gradient of loading efficiency (%) to concentration (mM) of the oligosaccharide in the oligosaccharide solution.

54. The process of Claim 52 wherein said oligosaccharide is trehalose.

55. The process of Claim 53 wherein said oligosaccharide is trehalose.

56. A process for loading a preservative into blood platelets comprising:

providing a preservative solution having a preservative, water and protein;

disposing platelets in the preservative solution for loading the preservative from the preservative solution into the platelets to produce preservative-loaded blood platelets wherein said preservative solution generally has higher glass transition temperatures than glass transition temperatures for a preservative solution having the preservative, water and no protein; and

preventing a decrease in a loading gradient in the loading of the oligosaccharide into the platelets.

57. The process of Claim 56 wherein said preservative comprises an oligosaccharide and said preventing a decrease in a loading gradient in the loading of the oligosaccharide into the platelets comprises maintaining a concentration of the oligosaccharide in the oligosaccharide solution below about 50 mM.

58. The process of Claim 56 wherein said preservative comprises an oligosaccharide and said loading comprises loading by fluid phase endocytosis.

59. The process of Claim 57 wherein said loading comprises loading by fluid phase endocytosis.

60. The process of Claim 56 wherein said preservative comprises an oligosaccharide and said preventing a decrease in a loading gradient in the loading of the oligosaccharide into the platelets comprises maintaining a positive gradient of concentration

of oligosaccharide loaded into the platelets to concentration of the oligosaccharide in the oligosaccharide solution.

61. The process of Claim 60 wherein said oligosaccharide is trehalose.

62. A method for preserving platelets, said method comprising
providing solute-loaded platelets, and
drying the platelets in an iso-osmotic freeze drying solution to produce dried solute-loaded platelets.

63. A method of claim 62, wherein said dried platelets are rehydrated, without prehydration.